Electricity on the Farm

A Monthly Magazine for the Progressive Rural Family

November, 1930

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GENERAL ELECTRIC

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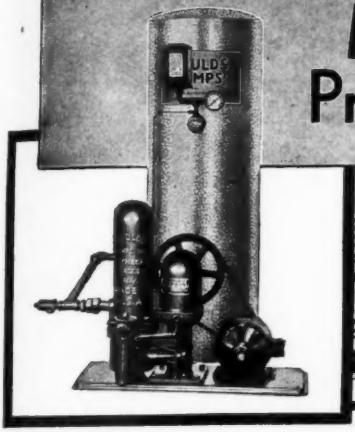

A HOSE with a stream of water under pressure is a real protection. Fires can be controlled before they reach destructive proportions. The garden can be amply watered regardless of the rainfall. The barns are easily flushed out—kept clean and sanitary.

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Electricity on the Farm

Vol. 3 NOVEMBER, 1930 No. 11

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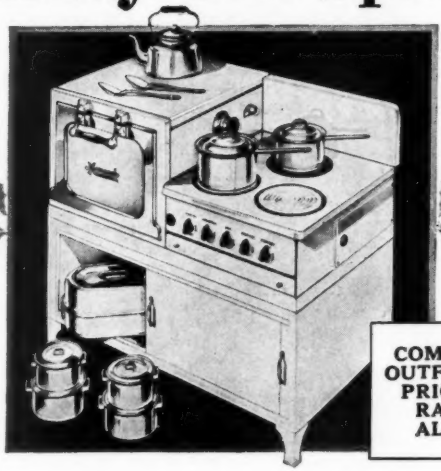

The range you pay for. The complete electric cookery outfit is our Christmas gift to you.

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Fig. 2557

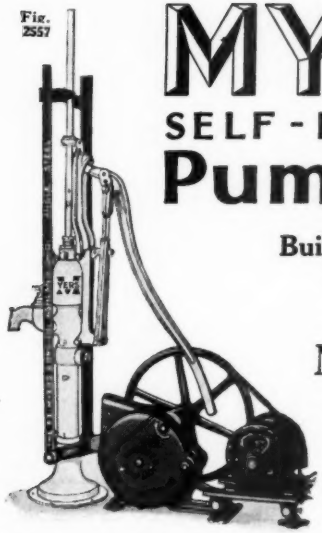

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Fig. 2831

One-piece casting serves as oil reservoir and completely houses all gears and working parts, protecting them from dirt, rain, ice, sleet or snow. Perfect and continuous lubrication without care or attention.

Fig. 2619

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Take Off Your Hat to the MYERS

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lasts 365 days of the year

Christmas-time is winter-time . . . but summer, winter, spring and fall are all times when electric helpers make days more pleasant and full of cheer. That's why they make such ideal Christmas gifts in any home. Mother, especially, will appreciate the thoughtful spirit that puts a Westinghouse Vacuum Cleaner to work for her every day from Christmas on. Electric ranges, warming pads, radios, toasters, heaters, percolators — the list of useful electrical gifts for every member of the family is almost endless. Your power company or the nearest Westinghouse dealer can show you the complete Westinghouse line. There's only one Westinghouse grade — the best that can be built.

The Complete Farm Electrification People

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The G-E Wiring System has been designed by experts to provide the greatest convenience and safety. Only materials of the highest quality are used. Ask your power company to tell you about it.

Send for the new booklet "Electric Helpers for the Farm." Address Room 317, Building 6, General Electric Company, Schenectady, N. Y.

GENERAL ELECTRIC

Electricity on the Farm

Vol. 3 NOVEMBER, 1930 No. 11

Let Us Give Thanks

Thanksgiving Day marks the end of harvest labors and, as in early Colonial times, remains as an official reminder to offer thanks for blessings we have received during the year. While some sections of the country may have suffered severely from the drought of the past summer still there is no famine; all have yet much to be thankful for.

We of the American farming industry enjoy tremendous advantages over many of our foreign brothers. Recently a traveler from abroad outlined farming conditions in many of the European countries, and particularly in southern Europe where little machinery and very few animals are employed in farming operations. In almost every case the work is done by hand, all members of the family, from little children on up, taking part in it. Under such unimproved conditions the returns from farming are indeed small and the privations which the farmer and his family must suffer are severe.

The tendency in this country has long been toward the elimination of hand labor and the substitution of machine power instead. While this may result in a temporary over-production of foodstuffs, the condition is one which will eventually rectify itself.

Electricity is doing its share in the emancipation of the American farmer by performing many of the time consuming and laborious tasks formerly done by hand. It is making the farm home a real home; it is giving city advantages to the children growing up on farms; through radio, it is bringing to the farm household the very same features of enjoyment which the city dwellers receive.

So the old farm is not such a bad place to live after all, and we have little reason to kick against conditions as created by nature or other agencies beyond our control.

Thanksgiving thus finds us in a position where we should wholeheartedly offer thanks for those things which we have received during the year.

There are always plenty of JOBS *for the small Portable Motor*

By B. W. Faber

Fig. 4. This small portable motor is a great help to Mr. Baur for grinding meat during the butchering season

ELECTRIFICATION of farm operations does not take place over night. To begin with, a man is chiefly concerned with the use of electricity for light. After this the time soon comes when he desires to use this new power to run the equipment he has been turning by hand.

Seasonal Uses

There is the sausage grinder, the fanning mill, the apple grader, the corn sheller, the churn, the ice cream freezer and the small concrete mixer. In the main these are seasonal jobs, that is to say, the sausage grinder is used at butchering time, the fanning mill when the seed grain is to be cleaned, and the apple grader in the fall. A man may be heartily tired of turning this equipment by hand, but feels that these seasonal jobs hardly warrant the installation of a motor with each piece of equipment.

A home-made affair for this purpose was recently encountered on the J. L. Baur farm near Greensburg, Pa. Mr. Baur uses considerable electric equipment, being one of those who were using 3,000 or more kilowatt hours per year when the Rural Service Committee of the National Electric Light Association made its survey in 1928. Mr. Baur was using his home-made portable motor to drive a cream separator, an emery wheel, a sausage grinder, an ice cream freezer, and other miscellaneous equipment. The cream separator was used only irregularly to separate surplus milk. Each time the motor was taken from one job to another four bolts had to be removed and then reinserted and fastened when the motor was applied to the next machine. To

avoid all this a special base for a small portable motor has been developed and is being tried on the Baur farm.

Make-up of Unit

Briefly, the unit consists of a standard motor, with brackets and handle for carrying a Sentinel breaker to start and stop the motor and also give it thermal protection against burning out, a generous length of cable so that it can readily be attached to a convenience outlet, and the special base for quickly moving the unit from one place to another and easily tightening the belt.

In Figure 1 this portable motor is shown attached to an ice cream freezer. The construction of the base can be readily noted in this photograph. There are two plates which make up the base. One is permanently attached to the motor, and the other is attached permanently at the place where the motor is to be used. To remove the motor from one machine to take it to another, one wingnut is removed and the motor slid forward. It can then readily be taken to the next job where a corresponding base awaits it. The motor is placed in position, the belt tightened, and the wingnut turned down to hold it firmly in position.

The ease with which the motor can be removed from one job and securely placed in position at some other job has greatly increased its usefulness to Mr. Baur. Mr. Baur estimates that, in the course of a week, the motor was changed from one job to another approximately eleven times, and each time an av-

Fig. 3. And in the workshop too, this modern helper is welcome. A power driven emery wheel is a great help when sickles, disc blades, etc., are to be sharpened

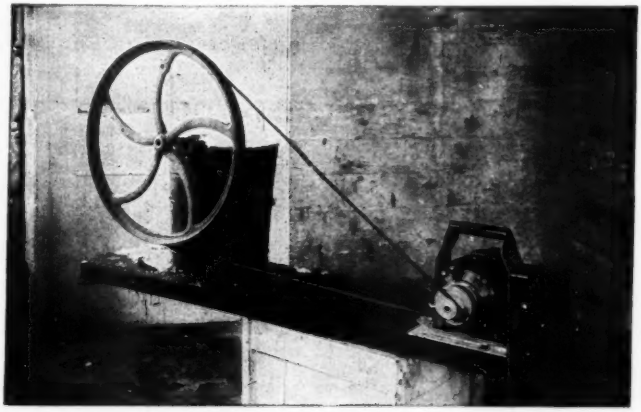


Fig. 1. Portable motor attached to an ice cream freezer. Special base construction on motor facilitates moving from place to place

Fig. 2. Due to the fact that cream separating is not a twice-a-day job for Mr. Baur, the portable motor is employed for this task also

erage of 15 minutes was saved or approximately two and three quarter hours per week. Naturally the new motor was used a great deal more because it could be changed so readily.

Ordinarily a farmer would not use a portable motor on a cream separator, since a cream separator is generally used twice a day and should have a motor permanently installed on it. As pointed out, Mr. Baur does not use the separator regularly and therefore a portable motor was justified in this instance. Fig. 2 shows the new motor mounted in position.

In the Workshop

The portable unit was also used on an emery wheel (as shown in Fig. 3). In this case the emery wheel and base plate were mounted on a special bench, but the equipment could very readily be mounted on a regular work bench. A power driven emery wheel helps immensely when sickles, knives and disc blades are to be sharpened, or farm machines repaired.

Tiresome Task Eliminated

Turning the sausage grinder by hand at butchering time is always a tedious and tiresome task. The portable motor is a big help. In Fig. 4 Mr. Baur is shown feeding a piece of meat into the grinder. In order to get the slow speed required by the sausage grinder a reduction gear was used. It has a 12 to 1 reduction with a multiple pulley of various diameters so that a number of speeds could be obtained. The Baur family are able to grind 200 pounds of sausage per hour with the equipment shown in Fig. 4.

Another machine on which Mr. Baur finds the portable motor very useful is the churn. But it might also be applied to corn shelling, apple grading, sheep shearing and concrete mixing.

The ease with which the motor can be removed from one job and securely placed in position at some other job has greatly increased its usefulness to Mr. Baur. Mr. Baur estimates that, in the course of a week the motor was changed from one job to another approximately eleven times, and each time an average of 15 minutes was saved or approximately two and three-quarters hours per week.

Water Makes Eggs

But Chickens Like It Warm in Winter

By Truman E. Hienton

THE dairyman is probably the only type of farmer who surpasses the poultryman in the amount of "watered stock" which he sells. Milk contains 86 percent water, while eggs contain 65 percent water, and live birds, the other chief product of the poultryman, are 55 percent water.

The need for an adequate water supply for poultry is borne out in the above figures. There is probably no other single factor which will decrease production of eggs as quickly as withholding water. This constant need for water by poultry is responsible for the use of heaters in the winter time to prevent the freezing of water in the poultry drinking fountains, and the consequent closing of the water supply.

More Water Consumed

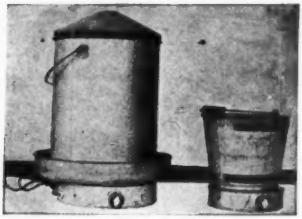
Experiments conducted by the Oregon Agricultural Experiment Station indicate that birds drink 5 percent more warm water than that at ordinary temperature (Oregon Agricultural College Station Circular 81, May, 1927). The length of the tests were too short, however, to determine whether or not there was a difference in physical condition of the fowls or in egg production. During the tests conducted, the temperature was below freezing the entire day for just two days.

Due to the difference in prevailing temperatures between Oregon and Indiana conditions, an experiment somewhat similar to that at Oregon was undertaken by the Poultry and Agricultural Engineering departments of the Purdue University Agricultural Experiment Station in the fall of 1927. The purpose of these experiments, based on the assumption that water in the drinking fountains must not be frozen over, was to determine the relative efficiencies of various types of poultry water heaters and the necessary wattage or heating capacity of the heaters to prevent freezing over at any time during the entire day. These experiments were conducted during the winter of 1927-28 and were continued and amplified during the winter of 1928-29.

Scope of Tests Broadened

The experiments during the first winter were concerned entirely with heaters considered suitable for use with a 14-quart galvanized bucket. The scope of the experiments was broadened during the second year's work to include heaters for 8 and 12-gallon cork-float drinking fountains and a rectangular trough.

The electric heaters used can be readily divided into two classes. First, the heaters which are immersed in the water, and second, the heaters attached to, or placed in direct contact, with the container without it. In the first class, there are several types such as the soldering iron, tumbler heater, and immersion heater. The first type, while occasionally used, is not as satisfactory as the especially designed immersion heater, of which there are at least four makes now on the market. In the second class, one type consists of placing a special bucket or container over a carbon lamp, a second type consists of ring, strip, or coil heaters which are fastened to the container and the third comprises fountain warmers or heaters on which the bucket or fountain is placed. All of the heaters men-

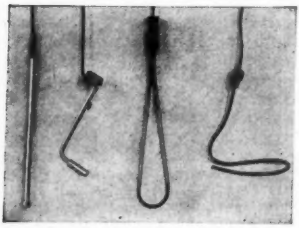


Fountain warmers for use with a 14-quart bucket or large drinking fountain prevent freezing of water in the poultry house during the winter

tioned have a fixed heating capacity with the exception of some fountain warmers which have three-heat switches.

The results of the experiments indicate that the immersion type heater is the most efficient. Immersion heaters of the same wattage as those of other types almost invariably kept water warmer where they were used to heat equal amounts of water in similar containers. The nearest competitor to the immersion heater in efficiency was the bucket placed over a lamp, with a cylinder slightly larger than the lamp and open at the bottom soldered inside the pail. The fountain warmer on which a bucket could be set appeared to rank next to the latter type of heater in efficiency, although there was little difference between it and ring or strip heaters which were attached to the fountain.

There appears to be certain advantages and disadvantages for each of these types of heaters. The immersion heater, while the most efficient, may not necessarily be the most economical because it has only one heat which at certain times may be more than necessary to prevent freezing. For example, if a 50-watt immersion heater is required to prevent freezing in a 14-quart bucket filled with water on the coldest winter day, there will be many days with freezing temperatures when a heater of smaller wattage would prevent freezing. The three-heat fountain warmer, while it does not transmit as large a percentage of the heat generated to the water as the immersion heater, does have a distinct advantage over other types of heaters. In warmer winter weather it may be operated at low or medium heat, whichever is necessary to prevent freezing and then switched to the next higher heat as the weather becomes colder. The three heats which are usually provided afford a wide range in heating capacity which is sufficient to prevent freezing during weather in which the temperature is just below freezing or which may get well below zero.



Four types of electric immersion heaters for poultry drinking fountains which were used in the Purdue experiments.

Results of Experiments

The results of the tests during the two winters indicate that a 50-watt immersion heater will prevent the water freezing over in a full 14-quart bucket where the temperature of the air goes down to zero in the poultry house. At this temperature, a small amount of ice formed on the top of the bucket, but not enough to completely cover it. At the same time, similar buckets with 30-watt heaters were covered with ice one inch thick. The three-heat fountain warmers used with buckets used 30 watts at low heat, 60 watts at medium heat, and 100 watts at high heat so that adequate heating capacity is provided for a wide range of conditions.

The immersion heater is not well suited for use with drinking fountains which have shallow troughs around them. With such fountains

(*Continued on page* 38)

Water

What does it Really Cost?

By E. R. MEACHAM

Mrs. Averbeck has hot and cold water at her finger tips

DOWN in the low country, between Charleston and Beaufort, down where Four Hole Creek ambles out to the sea, there is a little negro church where Brother Mose Allen coaxes and scolds his flock into the way of righteousness. One night he finished up a sermon with the dramatic assertion:

"Salvation am free!"

Then he sat down and wiped his shiny black brow with a splotless handkerchief. But he had to get up again directly and ask the usher standing importantly at the door to take up the collection.

"How cum you takes a collection, Brudder Mose?"

The interruption came from a group of well-dressed town negroes in one corner of the tiny church.

"You all jus' say salvation am free, and then you ask us to pay for it."

Brother Mose jumped up, his black eyes sparkling.

"Dat all right, Neb. Dat all right. Yo' Mammy goes down to the creek and gets the water every day that comes. She don' haf to pay for it. That water am free jus' like salvation. But off yonder in Charleston, you gets your water from a tap, and—water or salvation—when you gets it piped to you, you has to pay for it."

It goes farther back than that. Every pail of water that comes into our houses costs something and we have to pay its price in coin of one sort or another.

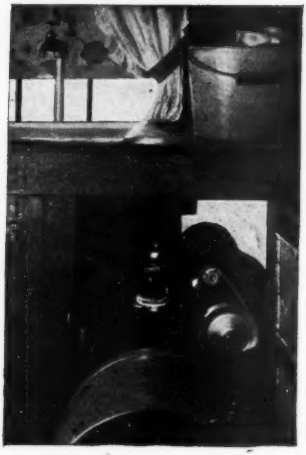
The Jim Hortons live on a comfortable 160-acre farm in Ohio. They have five children, two of them are in school; the other three are still babies, one in the cradle, the others at the mud-pie age. Most of the time Bess Horton carries the water herself, 40 gallons of it a day, from the pump four rods back of her kitchen door.

That seems like a lot of water. I said so doubtfully when I was talking with her one day. She laughingly replied:

"It takes a heap of water in a house to make it home, if Edgar Guest will forgive me saying so."

Individual Consumption

And I found she was really quite economical when I studied the tables in a recent bulletin on *Water and Plumbing Systems for Farm Homes,* published by the University of Illinois. There Professor E. W. Lehmann says they have found that when water is carried in by hand, it takes from six to eight gallons a day for each person in the family; when there is a pump at the kitchen sink, that amount goes up only two gallons a day; but when there is running



The space under the kitchen sink is an ideal place for a shallow well system

hot and cold water in the kitchen, it goes up to fifteen to twenty gallons, and when there is a complete plumbing system in the house, with lavatory, bath and toilet, as well as the kitchen sink, each member of the family may use as much as twenty to forty gallons a day.

So Bess Horton was keeping even below the average with her forty gallons for seven people.

Water Needed Regardless of Weather Conditions

It did not cost so much to bring in a pail of water on a pleasant spring morning, or on the first crisp days in the fall. But her family needed water whatever the weather. Fair days or foul, she had to spend at least half an hour a day as water boy. That cost quite a little in time in the course of a month. It cost considerable strength, too, to pump and lift, and carry 40 gallons of water. Sometimes it cost a little bit of her good temper, too, particularly when, with only half an hour to get dinner, with the telephone ringing, and the baby crying, she discovered that the water pail was empty.

The cost of a pail of water, then, must include all three, time, strength, good temper.

Mrs. Horton has not had a vacation for four years, but she has been spending eighteen days of ten hours each carrying water every year. When her husband put in an automatic water system this last summer, he made her a present of those eighteen days a year, for the rest of her life. Perhaps she cannot take them to do with as she will; perhaps she will have to spend them right on the farm where she is, but at any rate, she will not spend them with a water pail in her hand.

Meters Figure Cost

I have never seen any figures on what it costs in money to supply a family with water by the pail. It is far easier to figure it out when electric rather than human power does the job. We have meters for that.

But there has been a decided lack of definite figures on the first cost of a farm water system all complete and ready to furnish water for house and farm. The reason is clear enough. No two systems cost just the same when you get them installed. Conditions, distances, the depth of wells, all are different. One recent bulletin from Nebraska makes the cautious statement that such a system would have to be very elaborate indeed to cost as much as the cheapest new car on the market.

So it is not because water systems actually cost so much that the bucket brigade still has so many members. But the car is a complete unit, already assembled, just like thousands of others, and ready for use the instant it is purchased at a definite and widely advertised price. While the water system, though much cheaper, must too often be planned, assembled, even installed, by the purchaser himself.

During the past summer one power company in the middle west sold water systems all wrapped up and delivered at the kitchen sink. They quoted installed prices. These were not uniform, of course, for the demands and conditions of one

farm differed from those on the next. But they met with the farmer, planned the layout, found out just how much if any of the labor he would like to do himself, agreed on the size of the pump, the motor, and the tank, and decided what accessories, such as furnace coils, and softeners the company should furnish. Then they told him to the penny what the system would cost him.

I went out to see some of those water systems in operation last week. The first one I saw was on the farm of A. Averbeck, near Van Dyne, Wisconsin.

The Averbecks have a well with the water so close to the surface that they can use a shallow well system. They put it down in the basement of the house where it will be safe from freezing.

Reducing Cost

Mr. Averbeck and the hired man dug the trenches for the pipes, 64 feet of trench from the well to the house, and 75 feet from the well to the barn. It took them four days, for they had to dig through heavy clay soil. Mr. Averbeck estimates that their labor was worth four dollars a day, so if he had paid for the digging, it would have cost him thirty-two dollars.

The power company furnished them the complete system, with pump, motor, pressure tank, gauges and automatic control, and the piping to the kitchen sink, to two hose connections outside, and to the tank in the barn. They installed it for him, and the entire cost was $200.00.

"We had always had to carry every bit of water to the house, and you can guess we were tired of that," said Mrs. Averbrook. "We had wanted a water system for a long time, but we did not know how much one would cost, and we didn't want to get into something where the cost was going to be more than we wanted to pay. Buying a water system this way, we knew just what we were getting and just how much it was going to cost."

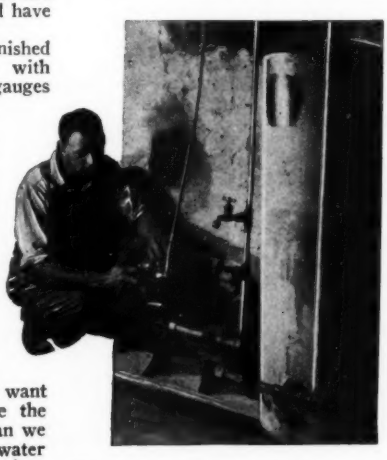
The Averbecks have a cousin who is an engineer. He came out and added a hot water tank to their water system. He put the heating coil in the furnace and did the necessary piping. If this had been done at ordinary prices for labor and material, he estimates that it would have cost fifty dollars more.

Hose Connections Useful

"We've had a lot of good from those outside hose connections this summer," said Mr. Averbeck. "One of them is for the lawn, and the other for washing the car."

"Yes, we had plenty of chance to water the lawn this summer," laughed Mrs. Averbeck. "We used gallons and gallons of sprinkling. I kept our celery patch going with it, too. We wouldn't have had any celery now if I hadn't sprinkled it."

"I used that hose a lot when we were filling silo," went on Mr. Averbeck. "The corn was awfully dry, and I kept the silage wet when we were putting it in, and then I put some more water in afterwards. The silage is keeping fine.



Weekly oiling is all the attention Mr. Averbeck's system requires

Mr. Totz and the children are interested in the deep well system on his farm

I've had less spoil than I ever had before."

"You are going to take a lot comfort in having plenty of hot water, too," I suggested.

"Yes," he agreed. "Of course, my wife will enjoy it in the house for cleaning and washing clothes, but we use a lot for our poultry and hogs, too, in the winter. They need warm drinking water and hot mashes, you know."

After we left the Averbecks, we went back to Kinkers' Korners and turned west to the Herman Totz farm.

Mr. Totz had put in two water systems this summer, one a deep-well system for hard water, the other a shallow well outfit for the cistern. Both are completely automatic. He built a new cistern and dug the trenches from the well to the house, and from the well to the barn. He also furnished the kitchen sink and its faucets for hot and cold soft water and drinking water.

His labor on the job took several days, but he did it when haying was over, and farm demands had slackened a little.

The company installed the two water systems, each with its own pressure tank, laid the pipes, but the coil in the furnace for the hot water, furnished the extra tank for it,—and charged him $325.00.

At a third place, a shallow well system with a capacity of 420 gallons an hour, was put in right under the kitchen sink at a cost of $141.25 complete.

Once the question of the price of a water system is disposed of, the question of its operation bobs up. While we were talking with Mrs. Averbeck, she had said:

"We thought a water system would be quite expensive to run, but it isn't. We can't see any increase in our bill to lay to that."

Operating Costs

The operation costs have been determined for us by several experiment stations. Engineers have metered many water systems on many different farms and discovered how much electric current it takes to run them.

Down in Kansas three farm families used an average of 11 kilowatt hours a month to pump water for the house, for watering the lawn

Type of Pump	Lift (ft.)	Kw.-Hr. per 1000 gal.	Ave. monthly kw. hr. consumption	Extent of Supply
Deep well	59	2.13	27.1	All well water
Shallow well	..	...	18.8	Well and soft water for house only
Shallow well	13	1.15	11.2	Well water for house some for stock
Shallow well	..	1.39	8.9	All well and soft water
Deep well	28	1.57	14.3	All well water
Shallow well	..	1.15	4.7	Well and soft water for house, some for stock
Deep well	20	1.16	32.6	All water

and garden. Two of these families had four people in the family, the other six. The water had to be lifted from 94 to 114 feet. They used just over 38 gallons of water per person per day on their farms, and electric current carried it for them at less than two kilowatt hours for every 1,000 gallons.

Test Results

A two-year test in Iowa is reported in the bulletin *Electric Service for the Iowa Farm,* published by the Engineering Experiment station at Ames, Iowa. These figures, taken from a table in that report, show an even lower average.

In a Nebraska bulletin on *Water and Sewage Disposal Systems for Farms,* Ivan Woods writes:

"Since the project of rural electrification was started in 1926, accurate costs of operation, amounts of water used in the house, and data on depths of wells from which water was pumped have been kept. On one farm the well is 65 feet deep. The maximum pressure in the pneumatic tank is set at 48 pounds. The electrically operated water system has required 1 kilowatt hour of electrical energy for every 400 gallons of water. This farmer pays 5 cents per kilowatt hour for electricity for pump operation. At this rate the power cost is 12½ cents per 1,000 gallons pumped. On another farm a well is 35 feet deep, maximum pressure in the tank is 50 pounds, and 670 gallons of water per kilowatt hour are pumped. At 5 cents per kilowatt hour this cost is about 7.4 cents per 1,000 gallons pumped. A shallow well system pumping from a cistern and against a maximum of 50 pounds pressure in a pneumatic tank is pumping 940 gallons per kilowatt hour of electrical energy used.

"On all of these systems water meters as well as electric meters have been used and read once a month. Where modern toilet, bath and kitchen plumbing are installed, the family of six is using slightly more than 100 gallons per day."

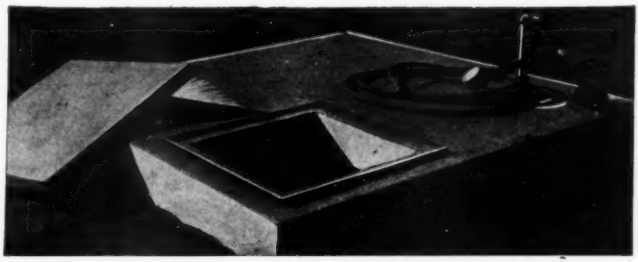
In town everybody connects to the water mains and uses the city water as a matter of course. City water is so cheap that no one is willing to do without it. Yet the rates are almost always more than 10 cents per 1,000 gallons, and under many conditions the electric current to pump water on the farm actually costs less than water drawn from the city supply.

What is the market price of water on your farm?

The Averbecks Said:

"We've had a lot of good from those outside hose connections this summer.

"Yes, we had plenty of chance to water the lawn. Our celery patch was kept going with it too, otherwise we would have no celery crop now."



Arthur Karow's deep well system is safe and sanitary in this concrete pit

Justice Roberts
Decides in Favor of Electricity

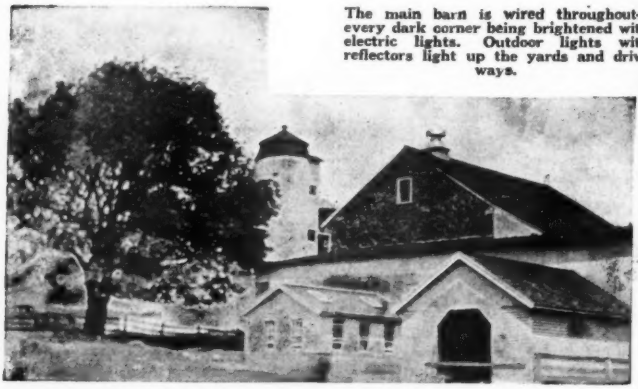
By Stanley Bidlack

THE 640 acres of Brynn-Coed Farms, the country home of Mr. Owen J. Roberts, recently appointed as Justice of the Supreme Court, are located near historic Valley Forge, just east of the little village of Birchrun, in Chester County, Pennsylvania. The land lies well, is somewhat rolling in character, and it would be hard to find a more beautiful view in all Chester County, than from Mr. Roberts' place. The center farm, of 160 acres, is worked under the active direction of Mr. Roberts, while the rest of the land, comprising five other farms, is let out to good tenants. They try to follow the best modern practice, and it is a point of pride with the Justice, that his place be as well kept as those of his neighbors, many of whom are the best kind of substantial, up to date farmers.

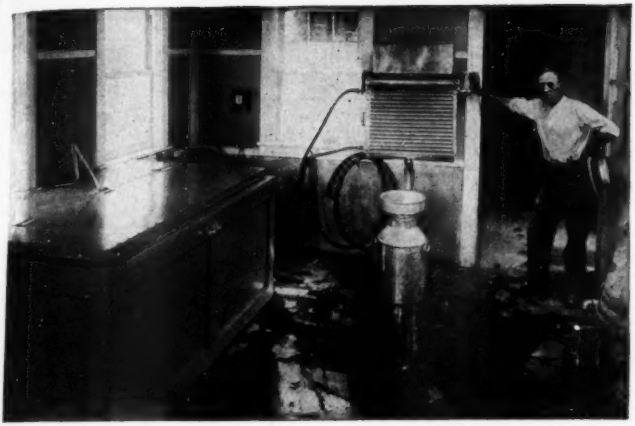
As might be expected, electric power has its place in Justice Roberts' farm management. About two years ago, the local power company contracted to build an electric line to Brynn-Coed Farms. At the same time, through the help of Mr. Roberts and other property owners in the vicinity, the line was extended to several neighboring farms and to the village of Birchrun, where nearly every place is connected.

All Buildings Wired

The first use of electric service was for lighting and water pumping. All of the buildings were adequately wired. The main barn has a light in every dark corner, and there are several out door lights with reflectors, to light the yards and driveways. The poultry house lights were installed with RLM reflectors, and were connected with a time switch. This automatically turns on the lights before daylight on winter morn-



The main barn is wired throughout—every dark corner being brightened with electric lights. Outdoor lights with reflectors light up the yards and drive ways.



Keeping the bacteria count down is one of the aims of Brynn-Coed Farms. Mechanical cooling equipment in the milk house is shown here

ings, and shuts them off when its time for the sun to be up. Mr. Lewin, the farm foreman, says that results from the poultry house lighting have been excellent, and that last winter, egg production ran about 70% for the entire flock of hustling white leghorns.

Mechanical Cooling

Before electric service was available, great difficulty was experienced in caring for milk. Although they were trying to keep it down, the bacteria count sometimes ran as high as 100,000 and over. Only well water was used for cooling, and the milk had to be trucked quite a distance. It was sold on a market where a bonus was paid for high quality. Not only was this lost, but the milk company even objected to taking the milk at all.

The solution, in part, was mechanical cooling, and so after some study, a 6-can size cooling cabinet was installed, with the proper size compressor. This cabinet is a complete factory-made cooling vat, designed to be operated by any standard compressor. In conjunction with the cooling vat, a circulating pump was installed, which drives the chilled water from the vat through the lower half of an aerator. Well water is run through the upper half. It brings the temperature of the milk down to about 65° F, and this makes a considerable saving in current, and also avoids some wear on the compressor. The chilled water from the vat finishes the job, with a final temperature of around 45° F. Mornings milk can be brought to this point in the time that it takes for the milk to run over the aerator. It can therefore be put on the truck almost the moment the milking is finished. Although quick cooling is not necessary for shipping after the evening milking, running milk over the aerator at night is a factor in keeping the bacteria count down, as the milk is cooled to a low temperature so quickly. As with the mornings milking, pre-cooling with well water in the upper half of the aerator, saves electricity.

Mr. Roberts also installed an electric milking machine for his herd of 18 pure bred Guernseys. Two single units are used with a vacuum pipe line, connected to a ¾ h.p. pump. The milk house was so arranged that this apparatus can be easily kept clean and sanitary, with little labor.

These improvements, with more careful attention to cleanliness than

ever, made the bacteria count tumble from 100,000 to under 4000 in a recent count. This satisfies the milk company, but not Mr. Lewin, who says, "We are going to beat that." Some changes are being made which will make the stable easier to keep in a sanitary condition. Modern stanchions and drinking cups are being installed. When these changes are completed, Mr. Lewin hopes to lower their present record.

Electric Service Pays for Itself

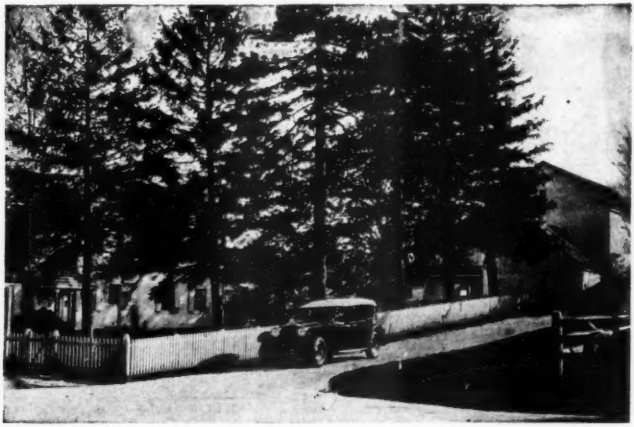
Brynn-Coed Farms is one of the many in Chester County, Pennsylvania, using electric service and making it pay for itself. That Justice Roberts is the owner, and that it is run according to his direction, lends much interest. And the domestic side of electric service has not been neglected, for there are two electric refrigerators, a large range with double oven and eight burners, and other pieces of electrical equipment in the kitchen of this home. Which shows that Mrs. Roberts makes as good use of electric service in the management of her domain, as the Justice does in the management of his farm.

Radio Music and Egg Production

Chickens have been encouraged to lay more eggs through artificial lighting of henhouses, but the use of radio would scarcely be expected to get results. Still, Mr. and Mrs. Joseph H. Thornton, owners of the Gunning River poultry farm near Barnegat, N. J., assert radio concerts in their henneries have increased egg production 15 per cent. Hundreds of letters asking all details have been received, Mrs. Thornton said.

Thornton explained that he had observed the chickens showing "increased animation and cheer" when he entered the houses whistling or singing. The radio idea came, and, put into practice, worked. Loudspeakers, connected to a set in the farmhouse, were installed in two of the henhouses. Increase in production of eggs over that in other houses resulted almost immediately.

The set is turned in at 3 A. M., and Mrs. Thornton said some difficulty was experienced in obtaining music at that hour.



Residence and Horse Barn of Justice Owen J. Roberts, Brynn-Coed Farms near Valley Forge, Pa.

Why When and How to Grind Feed

By R. R. Parks

IF you tell the modern progressive man that a certain thing, if done, will make his business more profitable, his first question will be, "Why?" If you can convince him why, his next questions will probably involve when and how this thing should be done. Not until those three questions have been answered will there be much action.

Why?

The advantage of grinding is that there is less waste and that the digestibility of the feed is increased by exposure of greater portions of its fiber to the action of the digestive juices in the animal. Some feeds have more available nutrients than others, therefore for each feed there is a difference in the value of grinding this fiber in preparing it for the animal.

When?

We have stated that there is a difference in the available nutrients from each feed. We might also state that there is a difference in the ability of animals to properly chew their food and thereby get the most value out of it. For instance, a middle aged milk cow eating shelled corn might not be able to properly digest the greater portion of the corn because she could not chew it properly. Then there would be an avoidable waste from that cow's digestive system. If she were being fed a medium grade of timothy hay for "bulk", even though the material loss was as great as in the case of corn, the cost of grinding might not justify having ground the hay for the cow.

McCandlish and Weaver * say 100 pounds of corn meal is equivalent for butterfat producing purposes to 125 pounds of corn and cob meal or 140 pounds of ear corn. Very little importance is placed on grinding hay by any of the several experiment stations that have conducted tests on it.

Let us consider beef cattle. There have been very few conclusive tests made on the value of grinding for beef cattle. The general opinion of animal husbandry

* The Preparation of Corn for Dairy Cows, Bul. 195, Iowa State College of Agr. & Mechanic Arts.

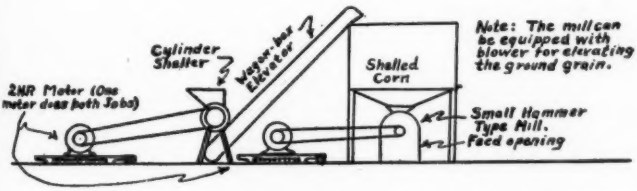

Cylinder Sheller
Wagon box Elevator
Shelled Corn
Note: The mill can be equipped with blower for elevating the ground grain.
2HP Motor (One motor does both Jobs)
Small Hammer Type Mill.
Feed opening

Fig. 2. In this layout, the same motor is used for both the shelling and grinding operations

Fig. 1. A simple grinding equipment for a practical farmer—an 8-inch mill belted to a 3 H. P. motor.

men is that young beef stock can properly chew their own feed and the only thing necessary is that, in the case of ear corn, the ear be torn apart so that pieces will not be scattered over the feed lot from the feed trough. As a usual rule hogs are allowed to follow beef cattle and in this way the loss is kept to a minimum, quite often the hogs being considered the profit of the feeding.

Grinding Small Grains Pay in These Instances

In general it pays to grind corn and small grains for brood sows and small pigs. Lambs should be started on ground grain but later can be fed whole grain without appreciable waste.

Consider Equipment

Since the most important grinding on the farm will be limited to corn and small grains let us consider equipment for that purpose only. Referring to the statement of the feed value of ground and unground corn for dairy stock we find that with corn selling at 80 cents a bushel, $1.43 worth of shelled corn ground into corn meal (medium ground) will produce as much butter fat as $1.43 worth of ear corn ground into corn and cob meal or $1.60 worth of ear corn whole. This allows us 17¢ for grinding either the ear corn or shelled corn. Let us see what equipment can be used.

The amount of corn and small grains to be ground is very important in considering the size of equipment to buy. For instance, in a balanced ration the average 12 cow herd will need about 6 bushels of corn every 5 days. That means that an outfit operated 30 minutes every five days will only have to grind ear corn at the rate of 12 bushels an hour to keep a supply on hand.

A 3 H. P. outfit will do that. Or the same equipment will

(*Continued on page* 38)

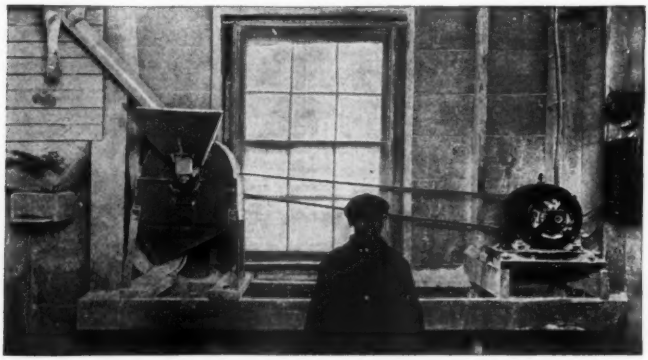


Fig. 3. Where considerable quantities of grain are to be ground, a stationary outfit will prove economical

A constant supply of fresh water is supplied these poultry houses by an electric motor

Experiences of a Poultry Breeder

By KENNETH N. TRACEY

IT would certainly be hard for me to carry on my poultry breeding operations without the use of electricity. For instance, there is the job of watering the flock. My 3000 birds require around 150 gallons a day or 55,000 gallons a year. That much water weighs about 225 tons so you can just imagine the time and labor required to carry it. But my ½ H.P. electric pump does it automatically and also provides water in the house, at a total cost of about 4½ cents a day for current.

A good breeder is very particular in everything that helps to produce eggs which will hatch into strong, healthy chicks. The chick must have vitality enough to get out of the shell, and eat, grow, and develop into a good layer. Electricity plays its part in this process. My all-electric incubator runs with an almost unbelievable accuracy, not varying more than ¼ degree above or ¼ degree below the temperature required. Its dependability and economy are remarkable. The capacity of the machine is 9000 eggs, and averages a 75% hatch, consuming from 17 to 20 K.W.H. per day, depending on the time of the year the hatching is done. With current at 4c. per K.W.H. and figuring a maximum consumption of 20 K.W.H. per day it only costs 25c. to hatch 100 baby chicks.

I have also had success in developing late maturing pullets

Close up view of electric clock which automatically turns lights on and off in poultry houses.

and in getting good production from hens not intended for breeders by lengthening the day so the birds can consume more feed and lay more eggs. During the winter months when the days are short and the nights are long and cold and egg prices are climbing, I start my electric clock which turns the lights on and off at whatever time is set. The use of electric lights on laying hens will increase production as much as 50%. My additional cost for light is only 15 cents a day.

There are many other uses for electricity on a poultry breeding plant, such as water fountain warmers, electric brooders, etc. My experience with electricity has convinced me that I have saved a hired man and it is much more accurate, dependable, and economical.

Nothing Else But

MacTight: "I have nothing but praise for the new minister:."

O'Malley: "So I noticed when the plate was passed around."

Marketing Grain On the Farm

AN idea expressed by a farmer recently, is one that should be kept in mind by every man who sells grain and buys commercial feeds is that the best market for the grain he grows is through his own live stock. With proper feed-grinding equipment and some live stock, probably poultry, hogs or a few dairy cows, the farmer can make a double profit on the grain he grows.

It is poor economy to buy ready mixed feeds if grain is grown on the farm and can be converted into a proper ration by the addition of a few supplements. Some farm organizations are now selling what they call a "balancer," which is nothing more than the feed ingredients needed to add to the grain grown on the farm to make a balanced ration.

Small grinders can now be secured at a relatively low price, so the investment cost of owning this equipment is not enough to justify going without it. Practical poultrymen will tell you that best results can be secured by feeding laying hens ground feed instead of shelled corn. The cost of operating such equipment is very slight where electric power is available.

Don't let your live stock eat up your profits by using expensive feeds grown on someone else's farm. You can avoid this by grinding and mixing your own feeds. By this plan you sell your grain as well as additional labor through the livestock.

Lawn Fertilizer

For many years bone meal has been used quite generally as a fertilizer for established lawns, but experiments conducted by the United States Department of Agriculture have shown that a mixture of 3 parts of cottonseed meal and 1 part of ammonium sulphate gives much better results. This fertilizer should be applied in spring and early fall at the rate of 12 to 15 pounds for 1,000 square feet.

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Waffle Weather

THIS is a waffle weather. No, my dear, you do not tell it by the months that have a "W" in them. Not at all. In fact, the calendar is not much help in determining the date. You tell it first by a pleasant little crispness in the air; you recognize it when the snow snaps and crackles under foot. You feel it when wood fires flame in the fireplace. The season is a long one, fortunately, and through all its many months, waffles are good.

There are fashions in waffle irons as there are in skirts. My first waffles were made on a heavy cumbersome cast-iron device that stood up over the fire on a high circular collar. It had to be high to let the grids turn over and bake the far side of the waffles. It was heavy and hot, and it chained me to the kitchen stove, but it certainly made good waffles.

The next one was a smart nickle-plated affair that was heated by electricity. It sat right on the dining room table and turned out the waffles hot and crisp right on the plates.

Then last Christmas time I got a new waffle iron with pale green handles, a green cord and a finely etched design on a dull metal surface. It was distinctly a thing of beauty and its performance was in keeping with its looks. Its real improvement was a little heat indicator that tells just when the iron is hot enough for the waffles —as well as when it is too hot.

Improves Waffle Baking

This little indicator saves lots of waffles in the course of a year; it makes a whole lot of waffles a whole lot better—and it keeps my temper smooth and placid through all vicissitudes of baking waffles for a pack of clamoring, hungry guests.

Waffles have no partiality for one meal over another. They appear quite properly at breakfast with sizzling sausages or fragrant

We Have Waffles for Breakfast

ham. They are almost a part of the words and—syrup, you know.

If you like them for luncheon you can serve them with creamed chicken or salmon and a crisp green salad. Then if you pass the honey, some raspberry jam, to finish the last waffle with, you have made them furnish dessert, too.

At dinner they can be preceded by a bowl of hot soup, and flanked by a fruit salad. They will furnish bread and potatoes in themselves. Any creamed meat goes well with them. For dinner as well as for luncheon, the last waffle makes a fitting dessert if it has the right trimmings.

For Parties Too

They are quite proper for parties, too. And since, there are fashions in waffles, just as there are fashions in waffle irons, it is nice to have the latest style in waffles when you serve them as a refreshment for your club. There are new ones every year. These fascinating recipes come from Mrs. Phyllis K. Dunning, who knows a very great deal about waffles, indeed. She it is, who suggests that a waffle iron better not try to serve more than six at a time for a party of any kind where you hate to have your guests wait. Get other irons, and a couple of friends to help you if you want to serve a crowd. And make sure that all of the irons are not run from the same electric circuit in your house. Your power company representative will be glad to tell you which outlets are on the same circuit, and help you plan how to use three or four waffle irons at once, without overloading any circuit.

Date Waffles

1¾ cups flour
1 tablespoon sugar
3 teaspoons baking powder
½ teaspoon salt
2 eggs
1 cup milk
4 tablespoons butter
1 cup chopped dates

Mix and sift the dry ingredients. Beat the eggs well and add the milk to them. Add the melted butter and combine with the dry ingredients. Add the dates. Bake on an electric waffle iron and serve with whipped cream or just dust with powdered sugar.

Spice Waffles

1½ cups flour
2 teaspoons baking powder
¼ teaspoon salt
1 teaspoon cloves
1 teaspoon allspice
1 teaspoon cinnamon
6 tablespoons shortening
1 cup brown sugar
2 eggs
2/3 cup milk

Cream together the shortening and the sugar. Beat the eggs well and add. Mix and sift together the dry ingredients. Add the first mixture alternately with the milk, beating well after each addition. Drop spoonsful on each section of the waffle iron and bake for about three minutes. Serve with whipped cream.

* *

Broiling the Steak

BROILING used to be looked upon as one of those mysterious tricks in the art of cookery that only those initiated in the innermost circles should attain. That is not so strange, for the very best broiling used to demand a charcoal fire, because charcoal would give glowing red coals and very little smoke or flames—except a sputter now and then when drops of fat dribbled off the meat.

But any one with an electric range in their kitchen has a perfect fire for broiling any time she turns the button, and it is in the top of the oven over the meat rather than below it, so dripping fat does not spatter on the glowing wires.

Broiling cooks meat quickly, searing the flavorous juices inside and producing a delectable result.

If you have always cooked with wood or coal or oil, you may not know just how to go about broiling a steak, but it is really quite simple.

The steak should be about one and one-half inches from the upper unit in your oven, so it is well to determine, before you turn the burner on, just what rack the broiler must be in. In some ranges and for some meats it is on top; and

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sometimes it is on the second guide down.

Turn the temperature control to five hundred degrees, and turn the upper unit on. You do not want the current to go off during the broiling, so set the control high.

Preparing the Steak

Wipe the steak off with a damp cloth. Cut through the edge of a porterhouse or a sirloin so the edges will not curl up.

Rub the wires of the broiler rack with a little piece of fat to keep the meat from sticking. Put a couple of tablespoons of water in the broiler pan; then as the hot fat drops down, it will not burn and smoke. Be careful not to get too much water in or you will steam the meat.

Now you are ready to put the meat on the broiler rack and slide it into place. Sear one side. Turn and sear the other side. Be careful not to pierce the meat with the fork or the juice will run out. After both sides have been seared leave the steak until it is done on one side. If you are continually turning the steak, you will have to cook it longer because the side that is away from the fire cools, and has to be reheated each time. This dries the meat and takes away some of the fine flavor.

The best cooks say that the meat is ready to turn when the side away from the heat begins to look puffy and to send out jets of steam. If the steak is more than an inch and a half thick, you will probably have to turn it a second time to be sure that it is cooked through.

When the meat comes out, all the rest of the dinner must be ready so you can pop it onto the table without delay. It should be served on a hot platter with dabs of butter melting over it and a fine sprinkling of salt and pepper.

I have talked about steak as though steak were all we broil. But that is far from so. Chops of all kinds, lamb, pork, veal, mutton, are delicious broiled. They should be cut rather thick, three-quarters of an inch at least I like them still thicker, though of course it takes them a little longer to cook. If they are too thin, they will be dried out in the cooking.

· · · OUR NEIGHBORS · · ·

Mrs. Lau

I MET Mrs. Lilah Lau last summer at the ten day Drama and Speech Institute of the University of Wisconsin. She came up from Swanton, Ohio, particularly for a course in public speaking and a couple of courses in play writing and play production, because she herself makes speeches, and she writes plays, and she is constantly helping to produce plays and pageants not only in her own community but in summer camps and summer schools, too.

Mrs. Lilah Lau

But I must not plunge into the story in the middle like that. Every well brought up story begins at the beginning and goes forward straight as maybe to the end. And this one should. It began, as far as I was concerned, when I heard her tell a friend that she had left her husband at home to take care of the children and the chickens while she came up here to study.

That sounded unusual and interesting to me. I found myself thinking about it between classes and wondering about how old the children were, and whether her husband would always remember to get the chicks in if a sudden shower threatened and what the Laus' life work and interests really were. My curiosity grew as I watched her give her very clever and able impersonations in the

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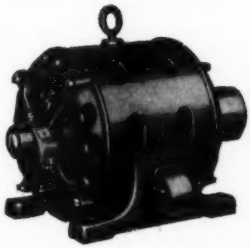

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Century MOTORS

pantomine class. It buzzed about in my head when I listened to a pageant she had written.

Consents Generously

It was so insistent that I took my courage in both hands and went up to her one day and asked her right out if I might tell you about her activities. Perhaps because she writes for farm papers herself, and is glad to help someone else who is following hard on the trail of a story; perhaps because she is just naturally as generous as the upward curves of her lips indicate, she consented.

So we went down to the Old Fashioned Tea Room for lunch one day and talked long over our tea cups. I was so absorbed in her account that I quite forgot to get her back to her afternoon class as I had intended at the outset. After our lunch had been served and a hovering waiter had been waved away, the story I was after began to unfold.

The beginning of the story, of course, is Mrs. Lau herself. She is the wife of a minister, Reverend C. I. Lau. She was born in Iowa; he one thousand and eight miles distant in southeastern Pennsylvania. She was the organist in his first parish, so it would seem that they were destined for co-operative enterprises from the very beginning of their acquaintance, eighteen years ago.

They are now Home Mission aries workin on an experi mental project with religious aims and goals much as some university men work on experimental farms for state. The experiment is an attempt to put Christianity actively to work in every phase of the life of this rural community in such a way that the methods may be used in other communities. It is a demonstration parish under the Department of Country Life of the Board of Home Missions of the Reformed Church in the U. S.

It is a strictly rural charge; not tacked on to some town parish, as is so frequently the case. The work lies entirely in the country, twenty miles west of Toledo, Ohio, in a community whose population is 1,376. A house to house survey revealed sixteen distinct denominations in this population, and five different churches for them to meet in. Three of the churches are union buildings and Mrs. Lau told me that they had been informed that there were times in bygone years when various denominations held as many as five different services in one of the buildings on one Sunday.

Beginning the Task

"When we started work there five years ago," Mrs. Lau said, "we realized that the very first thing we would have to do with that community was to get the people themselves friendly, not only to help the folks on one road know their neighbors on the next, but those on the opposite sides of the township those on this, for all of their children were coming together in our centralized schools.

"The first fall we began to plan a cooperative Christmas party, sponsored by the one denomination and the Union Church to which we had been called. There would be supper at six o'clock and then a program with special music and a pageant in which people from these two

Everyone knows some farm woman that the rest of us would be interested in. If you do, won't you write me about her for OUR NEIGHBORS *column? If she does something unusual or interesting, tell us about that. Tell us everything you can think of about her. Yes, gossip as much as you like. If you can get a picture of her, or her activities, send that too.*

GAIL MEREDITH

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Here is a *perfected* electric brooder—a brooder with a copper circulating drum that gives savings of 50 percent current cost over ordinary electrics heating by radiation only. This heater *circulates* and radiates warmth, insuring plenty of oxygen for chicks and making heat go twice as far. It has positive, quick Make-and-Break Switch. No pitting, no arcing, NO RADIO INTERFERENCE. Guaranteed heating element and positive Snap-Off Automatic Temperature Control. Masonite insulated canopy. Legs adjustable from 6 to 9 inches. Write for Makomb Catalog giving complete description.

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with a reputation for durability, performance and maximum safety.

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is built like a high grade auto transmission — fully enclosed, running in oil. No chains or sprockets. Combination of cut-and-hardened and composition gears makes it practically noiseless while adding greatly to its "wearing" qualities. .. Also interchangeable motor or gas engine types.

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Write for Literature on Either or All.

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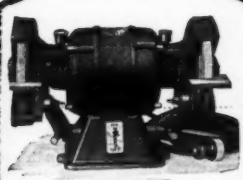

PORTABLE BALL BEARING COMPACT — LIGHT and POWERFUL

Until you actually have had one of these handy bench tools around, you can't very well appreciate how immensely useful they are.

Sharpening knives for the kitchen and for farm machinery, hatchets, axes, spades and all manner of tools —besides being first aid on many a repair job. The price is only **$35**

Marathon Electric Mfg. Co.
Wausau, Wis.

churches would take part." Mrs. Lau smiled a pleasurable little smile of reminiscence here.

"I thought we ought to plan for about 250," she went on, "but the women folks threw up their hands at that. 'Oh, you don't know our community,' they said. 'You won't have a hundred there.' But they were wrong. We had four times a hundred there.

Cooperation Essential

"The burning of our township high school, however, brought that about in an entirely unexpected way. That made cooperation imperative. All of the churches in the community joined in the party and the funds were used toward the replenishing of the school library. And every Christmas since that day, we've been having a Christmas party, using the funds for community betterment. Gradually the numbers have increased until for two years in succession we've served our chicken supper to over six hundred guests. I believe that this Christmas party and the spirit it has radiated has done more to unify our efforts than any other single undertaking."

In March, 1929, Reverend Lau organized a Men's Community Club with fourteen members; that membership has grown to sixty now. Their purpose, Mrs. Lau says, is to develop Christian Brotherhood, to support all organizations and institutions that are devoted to the development of the economic, social, educational and spiritual welfare of the community. They made the community orchestra boys honorary members, too, as a token of appreciation for the service they rendered to the community.

Vacation Bible School

The Laus hold a vacation Bible school that meets once a week during the summer. The sessions last from 9:00 o'clock to half past eleven. There the children are divided according to age for Bible study, and into story telling, dramatic and recreational groups.

The attendance for the school is drawn from all over the township. Parents take turns bringing the neighbor's children, so everyone will not have to drive in each week during the busy summer.

"One morning," said Mrs. Lau, "I counted fourteen children getting out of one car."

There is a curving hill on the parsonage grounds that makes a natural amphitheatre. Here Sunday evening vesper services are sometimes held, and the children use it as a setting for their Biblical Dramatizations for final public presentation. More than two hundred and fifty people have attended some of these outdoor services.

In June they—you see Mrs. Lau's story demands 'they' because not even on Sunday can you be sure where the husband's job ends and the wife's begins; she has frequently filled the pulpit when it was necessary for him to be away . . . they introduced the first state supervised rural play day in Ohio. It was sponsored by the Men's Community Club, and not only nearby residents but the grangers and rural teachers from adjoining townships came to enjoy it. It was supervised by R. Bruce Tom, Extension Recreation specialist of the college. Over three hundred people were there and plans are under way to make it an annual affair.

Other Community Work

Mrs. Lau directed toy symphonies as well as community orchestras, and has helped put on many plays in various rural communities. Through the Extension Department of the University, Ohio is experimenting with a scheme for presenting rural community plays that seems to me particularly good. Five groups work up a play; then each play is presented in different parts of the county so that the five make a regular lyceum course in themselves.

The Laus' has a stereoptican which renders varied valuable service. It is a versatile affair. They can use it with a six-volt radio battery; on their 32-volt plant in one of their churches; or on the 110-volt current at the centralized school. Mrs. Lau has made flood lights with tin pan reflectors; gal-

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Established Quality
Biggest Value

Among its features are: Full ¼ H.P. motor that will also run pump, churn, washing machine, etc. Equipped with latest model Stewart B-1 Clipping Head—the world's best. Does quicker, better job of clipping cows, horses, mules—and is easier to use.

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describing Stewart, the most complete line of Clipping Machines, both hand models and power operated types.

Clip cows before stabling in fall and each month—boost profits dollar a month per cow.

We can adapt your hand clippers and shearing machines for use with motor for $5.50. Write for particulars.

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MORE PRESSURE *than from a* 100 ft. TANK

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vanized tubs, and so forth, has worked out spots to suit every occasion using equipment varying from large funnels to five regular flood lights with lighting equipment.

Summer Activities

This summer she was leaving Madison to go to a combined camp and missionary conference near Pittsburg where she was going to teach dramatics and story telling. Immediately following this she was teaching again at a Leadership Training school at Dayton, Ohio, and from there she went to Eastern Pennsylvania to teach in a young peoples camp. She is booked for sixty lectures in Ohio communities this winter under the Extension Department of Ohio State University.

When they went to Swanton five years ago, no parsonage was available as there had been no resident minister in the community for more than twenty years so the Laus lived in an old farm house. Then two years later the Home Mission Board, under whom they were working, bought the fifty acre farm on which their present house is located. There they live with their three children, Vivian, just eight, and the twins, Duane and Eulaine, who are just past two. They have a truck patch with some fruit. Mrs. Lau usually cans about three hundred and fifty jars of fruit, vegetables and meat. They have several hundred pure bred chickens. At present they are making comparative tests with Columbian Rock, Lakinvelder and Barnevelder chickens. They are reforesting much of the farm. Of course they can't make a job of farming; their other job is far too big and exciting, so the tillable fields are rented to nearby farmers. Both Reverend and Mrs. Lau are active 4-H Club leaders with years of experience. In the past four years, eleven of their boys and girls have been sent to State Fair and State Club week to represent their county.

Both Reverend and Mrs. Lau are very fond of reading, and enjoy outdoor activities. Mrs. Lau plays the piano and violin for her own enjoyment and is interested in decorative arts. For several years she did pastel pictures and china decorating for commercial purposes in her home studio as well as teaching a good sized class of art students in creative arts.

I think a farmer's wife has often rather flattered herself that she has a varied job, that she must be mistress of a dozen arts and trades to carry on. But I am just a bit inclined to believe that being a minister's wife, certainly being a minister's wife in a job like this, demands even greater versatility.

As we pushed back our chairs and started to leave, Mrs. Lau put out a detaining hand on my arm.

"I do not want you to go away with the idea that we are not carrying on all the normal religious exercises of the church and its auxiliary organizations. I assumed that you would recognize that, and I have been telling you only the additional things that make our community work a little different."

"I know," I smiled back at her.

"We are not attempting to socialize Christianity," she said earnestly, "we are putting on an educational program and are trying to Christianize the social and workaday life of our community and make it a more nearly ideal place in which to live and grow. Life is just one problem after another, but Religious Education is one solution after another."

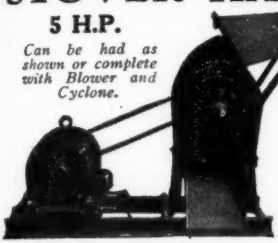
A Profitable Market for Butter Fat

One of the most profitable outlets for butter fat now offered is that for ice cream. Most of the 4,000 ice cream factories in the country pay a substantial premium for sweet cream and altogether take the butter fat produced from over one and one-third million cows. Since 1905 the per capita consumption of manufactured ice cream has nearly trebled. Better care of the separator and other milk utensils, prompt cooling of the cream and frequent delivery are making it possible to produce a quality product for this market.

STOVER HAMMER MILLS

5 H.P.

Can be had as shown or complete with Blower and Cyclone.



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Ground feed makes healthier, better stock—cuts feeding costs 20%. This Stover mill, designed for high-line use, grinds all small grains, shelled and ear corn. Consult your power company. Write us for descriptive literature and name of nearest dealer.

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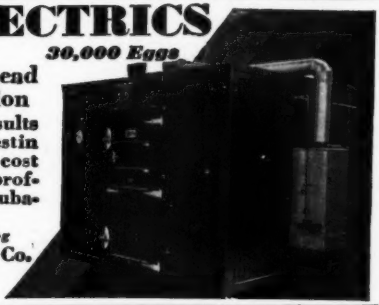
65 Lake Street Freeport, Illinois

SMITH ELECTRICS

52,000 Eggs ***30,000 Eggs***



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Electric VENTILATION KING SYSTEM

Automatic—Thermostatic Control —Right Temperature Always!

Starts when you need it. Stops when you don't need it. Set the control lever on the automatic thermostat—*that's all!*—and KNOW that your stock room is *always* at the right temperature. No drafts, no foul, wet, soggy air. Send for free circular telling all about latest KING developments. Find out how the Babson Purchase Plan enables you to have this NOW—*at low cost!*

BABSON MFG. CORPORATION
Dept. 55-18, 2843 W. 19th St., Chicago

Water Makes Eggs

(*Continued from page* 14)

the water is usually fed from the fountain to the trough by means of a float and this trough quickly freezes over in cold weather, even though the water in the fountain itself is kept warm by the heater. Fountain warmers of the approximate diameter of the fountain will prevent freezing in the trough as well as in the fountain itself.

Electric Units Preferred

Poultrymen prefer electric heaters to other methods of heating water fountains in their poultry houses for a number of reasons. The first of these and perhaps the most important is the elimination of fire risk. Another reason of equal importance is that of labor saving. In many installations an extra electric wire is run into the poultry house in addition to the two used for lighting purposes. This third wire, in combination with the live wire of the lighting circuit, is used as the water heater circuit. A single switch may then be used to turn on or off the entire lot of heaters. Such an installation without question requires less labor than that in which an individual lamp for each heater must be filled, cleaned and adjusted daily.

Mr. John Slater, a farmer living near Matthews, Indiana, purchased seven fountain warmers during the fall of 1928 and, even though he paid 10 cents per kilowatt hour for his electric current, felt that the return more than offset his cost. Another farmer, or rather banker who has a good-sized flock of poultry, Mr. Bailey Hawkins, cashier of the Carmel State Bank, Carmel, Indiana, used 6 electric immersion heaters during the winter of 1928-1929 and found them very satisfactory.

The rectangular trough which many poultrymen use is best heated, where the bottom is flat, by strip heaters. A trough of this shape was used in the experiments during the winter of 1928-1929. The bottom of this trough had been built in the shape of an inverted V, and a special heater built into the triangular-shaped space. This trough was 8 inches wide, 8 inches deep, and 30 inches long and seems particularly well suited to large houses, because of the amount of space provided for birds drinking at any one time.

Feed Grinding

(*Continued from page* 24)

grind shelled corn about twice as fast and the cost of grinding will be correspondingly reduced.

Fig. 1 shows the simplest (and cheapest from the standpoint of first cost) grinding equipment for the practical farmer. It is an 8" buhr mill belted to a 3 H. P. motor inside the pump house and will do the thing mentioned in the above paragraph.

Fig. 2 is a small cylinder sheller which is operated by a 2 H. P. motor. The capacity of this equipment under test was 50 bushels of corn an hour shelled and elevated with the wagon-box elevator into the storage bin. Two weeks' supply of corn is shelled into the storage bins. Then the motor is slid around on the floor into place at the hammer mill and the shelled corn is ground to a medium fineness as needed at the rate of 20 bushels an hour. This outfit while more expensive than the first one mentioned is more economical in operation, is faster, and is less apt to give trouble from wear and breakage.

Popular Systems

These two systems are shown because they are the two most popular and typical (the latter with variations of arrangement). Larger capacity can be installed where it is considered desirable. Many farmers are finding it desirable to do their own silo filling with a 5 H. P. outfit. In that case they use the 5 H. P. motor for feed grinding also, and have no difficulty grinding 18 to 20 bushels of ear corn per hour or more than twice that amount of shelled corn per hour, with either a buhr or hammer type mill.

Front Cover Title Contest

First Prize for September — $25.00

"A fair exhibition of the pulling power of electricity on the farm"

Seymour Dane, R. 2, Homestead, Fla.

The following titles have been selected as winners of the $5 cash prizes:

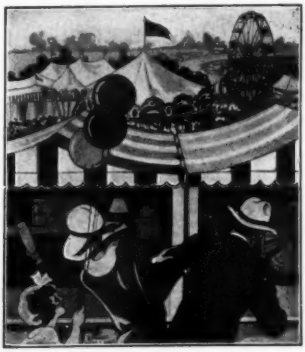
"Mother and dad at the electric tent, Both on modern improvements bent," J. Lynn Hickox, R. 2, Middlefield, Ohio.

"Mother and dad can't agree on the tent, But both of their minds are electrically bent," Mary Dix, R. 5, Sullivan, Indiana.

"Divided only in their demand, United for electricity they stand," Mrs. Nels Sundeen, R. I, Box 39, Isanti, Minn.

"An electric disturbance between the house and the barn," E. Belk McNeely, R. 1, Manhattan, Ill.

"Not a lack of harmony, as might appear to you; but heads of home departments, each with his job to do." Mrs. J. L. Poerter, P. O. Box 585, Cotulla, Texas.



Rules for November Contest

For the best title to this month's front cover illustration, a cash prize of $25.00 will be awarded.

In addition we will pay $5.00 for each of five titles given honorable mention.

In case of a tie, each winning contestant will receive the full cash prize to which he or she is entitled.

The winners will be announced in the January issue.

Only the farmers or members of the farm family, to whom this magazine was sent, are eligible.

Only one title may be submitted.

Use the form below or write your answers on a plain sheet of paper in similar form.

Be sure to answer question (a).

Write plainly and send your suggestion to the Title Editor, ELECTRICITY ON THE FARM, 24 W. 40th St., New York, before December 1.

My title for November Front Cover picture is.....

.....

.....

.....

.....

(a) Have you a portable electric motor? .....

What is the horsepower rating? .....

For what jobs do you use it? .....

.....

.....

Name .....R. F. D.....

Post Office..... County ..... State .....

Questions and Answers

Conducted by
H. J. GALLAGHER
Agricultural Engineering Dept.
Michigan State College

Note—Readers are invited to send in questions which will be answered in the order received.

Question: *We have a 6,600 volt line. It is grounded to the water pipe which leads from or to the well. The connection is made to the pipe about seven feet from the cement floor and after reaching the floor, the pipe runs a distance of 30 feet before entering the ground. Do you consider this a good ground?*

Answer: The service wires that lead to your premises do not carry as high voltage as 6,600 volts. The primary wires along the road may carry 6,600 volts but the voltage has been reduced through a transformer to 110 volts in the case of two wires or 110 and 220 volts in the case of three wires for the service you are using. I would consider your electrical system safely grounded. The National Electrical Code recommends the use of a continuous metallic underground water piping system for grounding purposes.

Question: *In a valley where electrical storms are very severe and much damage done by lightning, is the danger less with the current turned off at the switch?*

Answer: I believe during severe electrical storms it is safer to open the main switch. As far as an electrical system is concerned, it is grounded both sides of the switch and at both ends of the service wires through the transformer and the conduit leading into the house. However, as we all know lightning is a very freakish thing and it may, instead of following the shortest grounded pathways, splash over the wires that would conduct it in a round-about way to the ground. Under these conditions, the grasping of a light bulb or any wired piece of electrical equipment may convert the human body into a ground and prove dangerous.

Question: *What is a thermal overload control as mentioned in a question answered in the June issue of* ELECTRICITY ON THE FARM? *What do they cost, where can they be purchased?*

Answer: A thermal overload control is used in combination with electric motors to protect them against low voltage and overloading. An electric motor operating on low voltage or a heavy overload will burn out. Under either condition the windings of the motor become overheated and when they are too hot for safe operation, the thermal control breaks the electric circuit and shuts off the current. These controls permit of a high starting torque and a large overload for short periods of operation. Thermal overload controls for farm motors are usually combined with a magnetic starting switch.

Practically all companies manufacturing electrical supplies list equipment of this kind. The price of these units for 5 H.P. motors is about $35.00, controls for smaller motors cost less.

Question: *How could you judge when a small motor is getting too warm to operate safely?*

Answer: When it feels hot to the touch. A motor that is not too hot to comfortably hold your hand on is not overheated. An overheated motor also has a distinctive burning odor.

MAKE REAL PROFITS!

PETERSIME Electric Incubators are making larger profits for Hatcherymen and Poultrymen everywhere. Unmatched results—Lowest operation costs—built in five sizes from 1,400 to 15,984 capacity. Write for NEW Catalog—FREE—No obligation.

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Small down payment—easy terms—warranted by Delco-Light and backed by General Motors. Free book describes complete line. Write today for a copy.

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To Our Farm Friends

Only products manufactured by reputable firms will be found in the advertising pages of ELECTRICITY ON THE FARM. You may buy with assurance that they represent full value.

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No Belts—Self Oiling—No Bother

Made with ¼, ⅓ or ½ H.P. Motor, for direct or alternating current of all voltages. Strong, compact and durable. Spur gears run in constant oil bath in leak-proof case. Will give years of labor-saving service.

Write for prices and further information. Good territories open for GOOD dealers.

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The One-Man, One Hand Clipper

No stands, trolleys or cables. Clips udders, flanks, 8 to 12 cows an hour. Satisfaction guaranteed. See dealer or write for full description and special offer.

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Eliminates Drudgery

I enjoy most of all my electrical servants, my combination washer and dryer. It eliminates entirely the drudgery which always accompanied washing with my old-fashioned washer. Not only are my wash days made easier, but also my clothes are cleaner and much more sanitary, thus insuring more healthful conditions for the entire family.

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Our New Hired Hand

Our new hired hand is a wonder. He does not leave Saturday noon to be gone until Monday. He is ever cheerful, never scolds, is not affected by heat or cold, requires almost no attention, and does not need to be coaxed into doing his best.

He never asks for the family car, is not first to pick up the daily paper or the latest magazine, does not take the easiest chair, nor the cosiest corner, and does not hog the conversation.

Who is he? Why, our electrical water pump.

D. C. BOSTWICK,
Ardmore, Okla.

Enjoy Electrical Helps

Ironing used to be dreaded because of the necessity of keeping a fire at just the right heat and because of the endless tramping from ironing board to stove and back again in a ceaseless endeavor to keep the iron at just the right heat. But now ironing is a joy, with heat just right and no time wasted.

I thoroughly enjoy all electrical helps, but nothing relieves me of so much weariness as the electrical iron. At the same time I am enabled to do such good work, with no waste of time or energy.

ALURA COLLINS HOLLISTER,
Mukwonago, Wis.

Appreciates Modern Conveniences

Your little magazine contains a great deal of useful information. "Electrical Housekeeping" interests me most, although I do enjoy reading the other articles printed in the magazine.

One thing I am certain of, and that is that I would not care to live on a farm without the modern conveniences we are at present enjoying.

MARY MACDONALD,
Swayzee, Indiana

A Marvelous Mystery

I received the $5.00 check prize money for the picture title of July front cover of Electricity On The Farm and wish to thank you. I was delighted to know I was one of the winners. Enjoy reading the magazine too. Speaking of the electrical equipment, I think our electric water system is the most interesting. It is hard to say which implement is the most useful. They are all a wonder, but the little automatic pump stands in the cellar like a soldier ready for action, always doing his duty without one even pressing a button, pumping water from a spring some distance away.

Electricity is practically new to us as the line only came to our place in June. So we do not have so many of the electric servants yet. Washer, iron, lights and water system, but hope to add more as pocketbook permits.

Electric power is surely a marvelous mystery, doing the work so quickly, so quietly, and so efficiently. It is one of God's great gifts to mankind and I think the time will come when the work will be done without wiring. In fact I understand that science is working on it now.

MRS. JOS. A. HERR,
Nottingham, Pa.

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